WHAT IS CLAIMED IS:

1. A method of detecting and/or separating proteins by gel electrophoresis comprising the steps of:

preparing a sample mixture by dissolving or dispersing a protein-containing sample in water or an aqueous buffer;

adding a detergent to the sample mixture to coat or otherwise associate with the surface of protein(s) in the sample mixture;

placing the sample mixture on an inert, polymeric gel support matrix of the type used for gel electrophoresis; and

subjecting the sample mixture on the support matrix to an electric field in the presence of a fluorescent dye in a running buffer having a concentration of detergent less than 0.10%, so as to stain and separate proteins in the sample mixture into discrete bands based on molecular weight .

2. The method of claim 1 gel electrophoresis is standard SDS-PAGE gel electrophoresis

3. The method of claim 1 wherein the detergent is SDS

4. The method of claim 1 wherein the fluorescent dye is selected from the group consisting of Nile red , CAS# 7385-67-3, also known as 9-diethylamino-5H-benzo(α)phenoxazine-5-one). and Phosphine dyes.

5. The method of claim 4 wherein the fluorescent dye is Nile Red.

6. The method of claim 5 wherein the fluorescent dye is a Phosphine dye.

7. The method of claim 1 wherein the running buffer comprises an aqueous solution of 0.025 M Tris (tris(hydroxy methyl)amino-methane) and 0.192 M glycine at about pH 8.3.

8. The method of claim 1wherein the concentration of detergent in the running buffer is less than 0.075 % v/v.

9. The method of claim 8 wherein the concentration of detergent in the running buffer is 0.05 % v/v.

10. The method of claim 1 comprising the further step of visualizing the separated protein(s) on the support matrix.

11. The method of claim 10 wherein the step of visualizing comprises:
illuminating the support matrix with UV illumination.

12. The method of claim 10 comprising the further step of:
destaining the gel prior to the step of visualizing.

13. The method claim 12 wherein the step of destaining comprises:

washing the gel with water.

14. The method of claim 12 wherein the step of destaining comprises:

washing the gel with a destaining solution containing potassium chloride (KCl) in deionized water.

15. The method of claim 1 comprising the further step of recovering the separated protein fraction(s) for further processing, purification or analysis.

16. The method of claim 15 comprising subjecting the separated protein fraction(s) to further processing, purification, or analysis

17. A running buffer composition for gel electrophoresis comprising:

a fluorescent dye in an aqueous buffered solution having a concentration of detergent less than 0.10% (v/v).

18. The running buffer of claim 17 wherein the aqueous buffered solution is an aqueous solution of 0.025 M Tris (tris(hydroxy methyl)amino-methane) and 0.192 M glycine at about pH 8.3.

19. The running buffer of claim 18 wherein the concentration of detergent is 0.05% (v/v)

20. The running buffer composition of claim 17 of claim 1 wherein the fluorescent dye is selected from the group consisting of Nile red , CAS# 7385-67-3, also known as 9-diethylamino-5H-benzo(α)phenoxazine-5-one). and Phosphine dyes.